Nichols on Some Aspects of Migration.[1]— Those who are interested in speculating upon the origin of bird migration will find much food for thought in this short article of Mr. Nichols. Referring to the irregular southward migrations of the Red-breasted Nuthatch and other species of similar habit, he advances the theory that these movements are the result of a great increase in abundance within the permanent range of the species from which it then sweeps outward as it were in waves. We have all noticed how few Nuthatches return northward in the spring following an enormous autumn flight and Mr. Nichols explains this by the suggestion that the bulk of them are utterly dissipated and lost, and that only a small minority ever find there way back to their permanent range. This type of migration he terms 'centrifugal,' and considers it to be the original condition. Next comes the condition where the species has become so adjusted to conditions as to maintain itself in unvarying though comparatively small numbers, here there is overcrowding and consequently no migration at all. Then come species that retire from one part of their range to another during winter but never leave it entirely, simply adjusting themselves to changed conditions; this is 'intraspecific' migration; and finally an extension of this condition where the winter and summer ranges become entirely separated and the passage from one to the other constitutes the 'centripetal' migration so familiar in our spring and fall migrants where "highly developed homing instincts in the individual bird take the place of the futile centrifugal 'wanderlust' of the race in its initial condition."

The irregular movements of the Red-bellied Nuthatch and similar species have always been a puzzle to students of migration and the failure of food supply in their regular range never appealed to the reviewer as an adequate explanation. Mr. Nichols' theory on the other hand has much to commend it.

While his last three conditions and the development one from the other have been pretty generally recognized and will be generally accepted we do not think that he has been very happy in the selection of the White-breasted Nuthatch as an example of an absolutely resident species that does not migrate at all. Certainly in many places familiar to the reviewer it is much more abundant in autumn and winter than at other seasons. It may indeed be difficult to find a species in which there is not some migratory movement within its range.— W. S.

Birds of the National Parks.[2]— Three of the National Park 'Circulars of Information' for 1918 — those for Glacier, Sequoia, and Yellowstone

[1] An Aspect of the Relation between Abundance, Migration and Range in Birds. By J. T. Nichols. Science, August 16, 1918. pp. 168–170.

[2] General Information regarding Glacier Park, season of 1918 (birds, pp. 52–64); Ibid., Sequoia and General Grant National Parks (birds, pp. 20–27); Ibid., Yellowstone National Park (birds, pp. 61–66). National Park Service, Department of the Interior. Free on application to the Director of the National Park Service, Washington, D. C.

National Parks — contain lists of birds. The list for Glacier Park, Mont., published this year for the first time is by Mrs. Florence Merriam Bailey and consists of brief notes on 184 species. Lack of space made it necessary to condense the statements as much as possible and consequently less than half a dozen lines are devoted to any one species. The list for Sequoia Park, Calif., including also the neighboring General Grant Park was prepared by the Superintendent, Walter Fry, and has been published each year since 1912. It contains 182 species but only about 50 of them are marked with an asterisk to indicate presence in General Grant Park. Evidently much more work remains to be done on the birds of this park. Moreover the notes are less than a line in length and are confined to mere statements of the status of each bird as " common resident ' etc. The list for the Yellowstone Park, Wyo., is the work of M. P. Skinner and appears under his name for the first time, having been published anonymously in 1915, 1916 and 1917. It contains 194 species but the notes like those of the Sequoia list state merely whether the species are residents, summer residents, migrants, or occasional visitants. More space should be given such lists so that notes of local interest can be included and exact dates and localities given for species which occur irregularly or only occasionally.

When it is recalled that Glacier Park is larger than the state of Rhode Island, that the Yellowstone Park is two thirds the size of Connecticut, and that these reservations are visited by thousands of tourists every year, the importance of having complete and accurate lists of the birds can hardly be overestimated. Similar lists should be published at an early date for several of the other parks especially Crater Lake, Mount Rainier, Rocky Mountain and Yosemite.— T. S. P.

Economic Ornithology in Recent Entomological Publications.— A decrease in items includable under this heading is apparent and the present fasciculus of papers noted is the whole fruit of more than six months waiting. The articles relate to:

The Rhinoceros beetle (*Oryctes rhinoceros*). This species kills annually something more than one percent of the coconut trees of the Philippine Islands entailing a yearly money loss of nearly three million dollars. The natural enemies are few but among them are two birds, the Philippine Crow (*Corone filipina*) and the common roller (*Eurystomus orientalis*).[1] Adults of the Rhinoceros beetles are of heavy build and from one and one half to two inches in length and the larvæ are even larger. It is to be inferred therefore that the large size of the insect is an important factor in limiting the number of its predatory enemies.

The round-headed apple-tree borer (*Saperda candida*). In the Ozark region of Arkansas whole apple orchards have been abandoned because of the destruction of trees by this pest. A single individual of the species

[1] Mackie, D. B. Oryctes rhinoceros in the Philippines. Philippine Agr. Rev. Vol. X, Fourth Quarter 1917, p. 326.